It should be understood that the disk drive 10 may include a plurality of disks 12 and, therefore, a plurality of corresponding actuator arm assemblies 18. It should also be understood that the principles described herein are equally applicable to such disk drives.

Figure 2 is a diagrammatic representation of a simplified top view of a disk 12 having a surface 42 which has been formatted to be used in conjunction with a sectored servo system (also known as an embedded servo system). As illustrated in **Figure 2**, the disk 12 includes a plurality of concentric tracks 44a-44h for storing data on the disk's surface 42. Although **Figure 2** only shows a relatively small number of tracks (i.e., 8) for ease of illustration, it should be appreciated that typically many thousands of tracks are included on the surface 42 of a disk 12.

Each track 44a-44h is divided into a plurality of data sectors 46 and a plurality of servo sectors 48. The servo sectors 48 in each track are radially aligned with servo sectors 48 in the other tracks, thereby forming servo wedges 50 which extend radially across the disk 12 (e.g., from the disk's inner diameter 52 to its outer diameter 54).

As shown in **Figure 2**, a plurality of zones 56a-56d may be formed from groupings of tracks. While the figure shows zones comprised of an equal number of tracks, it should be understood that each zone does not have to include the same number of tracks. Furthermore, the disk surface 42 may be divided into many more or less zones than the number of zones illustrated in the figure. Even further, for purposes of the present invention, a zone may include a single track instead of a grouping of tracks.

With reference now to **Figure 3**, a diagrammatic representation of a sectional view of a disk 12 and a head 20 is illustrated. As shown in **Figure 3**, during operation, the head

20 (which, as illustrated, includes a slider) is raised above the disk surface 42 by a spacing 100 known as the flying height of the head 20. The spacing 100 is created by the interaction between air currents above the surface of the disk 12 caused by rotation of the disk 12 and the aerodynamic qualities of the slider of the head 20.

Figure 4 is a diagrammatic representation of informational content of a portion of a disk surface 42. As illustrated in **Figure 4**, the disk surface 42 includes data sectors 46a and 46b separated by a servo sector 48a containing positioning information.

Servo sector 48a includes a plurality of automatic gain control (AGC) fields 200, along with A, B, C and D servo bursts 202, 204, 206 and 208. As is well-understood by those skilled in the art, servo sector 48a also generally includes a synch burst and gray code, both of which are not shown in the figure.

AGC fields 200 extend radially across the disk surface 42 from an inner diameter 52 to an outer diameter 54. Generally, each AGC field 200 contains a signal of calibrated strength or amplitude. As the head 20 passes over the AGC field 200, the amplitude of AGC signal read by the head is monitored. This amplitude is used to adjust the gain imparted to other signals read by the head 20 (e.g., A, B, C and D bursts 202, 204, 206 and 208, respectively).

The inventors of the present invention have observed that the amplitude of the AGC field is generally based upon the flying height of the head 20. Accordingly, the inventors have used such information in determining whether a high fly write condition exists.

In an embodiment of the present invention, there are two main processes for determining whether a high fly write condition exists. First, a calibration process is

performed as shown in the flowchart depicted in **Figure 5**. Specifically, after servo sectors 48 have been written onto the disk surface 42 (step 500), the head 20 is used to measure the amplitude of AGC fields 200 associated with different zones 56a-56d on the disk surface. Accordingly, a counter N is initialized with a value of 1 (step 510) and the amplitudes of the AGC fields 200 in zone N are measured (step 520). Next, the amplitudes of the AGC fields 200 for zone N are averaged and stored in memory (step 530). Then, a determination is made as to whether amplitudes of AGC fields 200 for any additional zones need to be measured (step 540).

If there are additional zones, the counter N is incremented (step 550) and steps 520, 530 and 540 are repeated. If there are no more zones, the average amplitudes of the AGC fields for each zone are stored on the disk surface 42 (step 560), preferably, in a utility sector 210 (see **Figure 2**). As will be more fully understood from the explanation below, these average values are used to determine whether a high fly write condition exists.

Preferably, the process shown in **Figure 5** is performed during the self-test procedure. However, the process may be performed any time after servo sectors 48 have been written onto the disk surface 42, as indicated in step 500.

It should be understood that the amplitudes all of the AGC fields in a zone do not need to be averaged. Instead, amplitudes of a representative sample of AGC fields in a zone may be averaged to expedite the calibration process.

It should also be understood that average amplitudes of AGC fields are taken on a zone-by-zone basis in order to accommodate for changes in bit density across the disk surface 42. That is, the amplitude of an AGC field at the inner diameter 52 of the disk